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Retrospective study to determine the correlation between the organism load of toxigenic *Clostridium difficile* and the *C. difficile*-associated disease

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Background: *Clostridium difficile*-associated disease (CDAD) is a leading cause of nosocomial diarrhea in adults. Therefore, rapid and accurate reporting of *C. difficile* is essential. Rapid PCR-based in-house and commercial methods that are highly sensitive and specific are now available. However, PCR-based methods will only detect the presence of toxigenic *C. difficile* and could be carried by patients without CDAD symptoms. In these cases, the PCR may be presumed as a false-positive test for the disease. The objective of this study is to examine the correlation between the CDAD clinical outcome and the amount of toxigenic *C. difficile* load and to predict whether there is a relationship between the number of organisms present in patients with CDAD to assist clinicians in their interpretation of results and in making clinical decisions.

Methods: The clinical information from 200 randomly selected patients tested positive for the toxigenic *C. difficile* by a Real-Time Multiplex PCR that detects *tcdC* and *cdtA* genes were evaluated. The organism loads were calculated as genomic equivalents by a semi-quantitative real-time *C. difficile* PCR assay using known concentrations of genomic DNA. The organism load was grouped into high, moderate, and low based on the cycle threshold (CT) values. Patient chart reviews were used to collect multiple variables including age, sex, previous CDAD, previous antibiotic use, underlying medical conditions, and laboratory parameters.

Results: The patients aged from 1 year to 95 years with a mean of 60 years and a median of 71 years. Fifty-five percent of the patients were female and 45% were male. Among toxigenic *C. difficile* strains 39% were NAP1. Most ealderly patients had comorbidities. The majority (81%) had moderate organism loads. Only 15% and 4% had high and low organism loads, respectively. Previous CDAD and the presence of NAP1 gene was noted more in patients with high organism loads. The mortality in high organism load group was 20% compared to none in the low organism load group. All deaths were associated with the NAP1 strain in high organism load group with multiple co-morbidities.

Conclusion: High organism load is associated with the presence of NAP1 strain which increases the excessive toxin production leading to poor outcome in elderly patients with multiple underlying co-morbidities.

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Knowledge, attitude and practice of surgeons and surgical residents in disciplines standard precautions

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Background: Standard isolation precautions are designed to reduce the risk of acquiring occupational infections from both known and unknown sources in the healthcare setting. Awareness and compliance with these recommendations is crucial for the prevention of occupational nosocomial infections in healthcare workers. Improving the compliance of standard precautions (SP) is one of the most important ways to reduce healthcare associated infections, but also the most difficult to achieve. The aim of this study was to evaluate the levels of knowledge, attitude and practice of surgeons and surgical residents in Isfahan, regarding standard precautions.

Methods: In a cross-sectional study, 140 surgeons and surgical residents were evaluated about standard precaution in Isfahan University of Medical Sciences. Questionnaires were handed to participants who were willing to take part in the survey. The questionnaire included demographic data and also knowledge, attitude and practice of standard precaution. The questionnaire was self-administered. Descriptive and inferential statistics including Spearman and Mann-Withney tests were performed.

Results: In this study, 91 residents and 48 surgeons were assessed with the mean age of 38.26 ± 10.86 years. The mean for surgeons' knowledge was 8.25 ± 1.22 and mean for surgical residents' knowledge was 7.94 ± 1.37 ($P > 0.05$). The mean for surgeons' attitude was 40.56 ± 3.46 and mean for residents' was 38.68 ± 3.70 ($P < 0.05$). The mean of surgeons' practice was 4.78 ± 2.29 and mean of surgical residents' practice was 3.80 ± 2.21 ($P < 0.05$).

Conclusion: The results suggest that among study groups, the levels of knowledge and attitude regarding standard isolation precautions were acceptable; although compliance level was moderate. Therfore, for better acting attitude and practice, we have to educate and update healthcare worker especially who had poor practice.

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